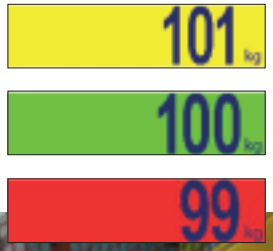
100% Reliable Quality Control
for Packaging Kits

colorWeight®



When it discovered items were missing from shipments to customers, Danfoss Commercial Compressors responded by increasing reliability in its checkweighing operations. After extensive research, Danfoss chose a turnkey solution that eliminated interpretation errors and enhanced its efficiency. Now, the company is confident every customer receives the items it ordered.

The Danfoss Commercial Compressors division develops and manufactures piston and screw compressors for refrigeration and air conditioning applications. Based in Reyrieux, France, the division's head office is also a major production and logistics site.

Danfoss Commercial Compressors optimizes its supply chain to offer reliable products and solutions that closely match the needs and expectations of its customers. To respond proactively to non-conformity issues, Danfoss increased reliability in its checkweighing with new weighing equipment.

The Reyrieux site mainly manufactures kits containing accessories for maintenance and repair that are supplied with its compressors. The accessory packaging workshop through its logistics department has recently been outfitted with METTLER TOLEDO equipment to help resolve an issue of reliability in checking the packaging of the kits.

After a customer complaint about missing items from the pack of accessories received, the company sought the best possible weighing equipment that could indicate clearly whether the pack was within the required tolerance or not. Danfoss chose a high precision weighing platform with 6 kg capacity and 0.1 g readability.

"METTLER TOLEDO suggested we go for a device equipped with a monitor for recording the weights corresponding to

METTLER TOLEDO

each part number and a colored screen (red, orange, green indicators) that allows visual distinction between conforming and non-conforming products," says Claire Mendes, logistics manager at the Reyrieux factory. "The product is an ICS669check turnkey solution, consisting of a terminal that can check instantly and efficiently for any missing items, without a risk of interpretation errors by the operator due to the indicators displayed."

As part of the turnkey solution, METTLER TOLEDO provides all the services associated with the products it had supplied: installation, calibration and training.

"We also appreciate the printer that automatically produces a validation ticket if the weight is correct. That's why we equipped both our order preparation stations with this complete unit," says Mendes. "Since outfitting these two stations, we are happy to say that we have had no more complaints about non-conforming orders. What's more, we have saved time in the order preparation checking cycle."

colorWeight®

Completeness checks with ICS685 terminal, high precision weighing platform (6 kg x 0.1 g readability) barcode scanner and printer.

100% Quality Control with ICS685

Profit from a smart checkweighing scale with a large, bright color display, user-friendly menus and various connectivity options. The ICS685 with colorWeight® functionality features a colored bar graph indicating immediately whether the weight or count is within or out of tolerance. Green indicates weighing within specification, while red indicates underfilling and yellow overfilling. Or, you can specify the color you want to allocate to a status.

The colorWeight® display technology reduces eyestrain, as the human eye can respond to a color much faster than it can read and interpret a value on a screen. The terminals are equipped with freely definable softkeys, providing quick access to the key functions and speeding up the working process.

The ICS685 terminal is dustproof and robust for use in harsh industrial environments. An integrated battery case makes the terminals mobile. The various interface options allow the connection of barcode scanners for fast article call up, printers for easy documentation and external keyboards for quick data entry. The portfolio is completed with a wide range of connectable weighing platforms – from 0.6 kg x 0.001 g up to 12 000 kg floor scales.

www.mt.com/ind-ics5-reputation-man10

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Stop Taking Risks
Rely on Service from the Weighing Expert

In highly regulated industries where consumer safety is at stake – such as automotive production – it's essential to ensure compliance with quality management and regulatory standards. When parts quality needs to be controlled, weight deviations of less than <0.001% can make a difference. But this requires an understanding of the parameters influencing the accuracy of a weighing process.

Are you really sure you are achieving the best weighing performance to meet quality standards and successfully pass audits? Find out now.

Risk Check your scale

Risk Check is an online tool that helps you find out if your weighing equipment delivers accurate results. Check the fitness of your weighing processes in only 5 minutes. Simply answer 8 questions and the Risk Check provides you with expert advice on how to optimize your quality system.

Check the fitness of your weighing processes now:

▸ **www.weighingrisk.com**

Perform systematic risk analysis

This white paper on quality management explains the various parameters that influence the accuracy of the weighing process. Use the paper before purchasing a weighing system for advice on how to establish good weighing practices and to learn about thorough risk analysis in an ISO-regulated environment.

Download free White Paper:

▸ **www.mt.com/ind-gwp-risk-wp-man10**

Be compliant

Regular maintenance and calibration of your weighing equipment are important to comply with standards and meet your customers' requirements. The tools and procedures your provider uses have a significant impact on outcomes. With calibration services from METTLER TOLEDO, you can be confident that your scales perform to specification – and that your auditors know it too!

Learn more about high-quality calibration & certification:

▸ **www.mt.com/service-man10**

GWP®
Good Weighing Practice™

Better Accuracy - Best Results

Profit from METTLER TOLEDO's expert knowledge in a Good Weighing Practice® (GWP) Webinar and get insight on how to implement a sound quality management system for your weighing equipment.

Register now to participate in a free on-demand GWP® Webinar:

▸ **www.mt.com/GWPWebinar-man10**

High Throughput
Despite 100% Inspection

The manufacturing process for solar cells consists of a multitude of individual steps. A weight check between each step ensures that only good wafers proceed to the next treatment. METTLER TOLEDO has the right products and the expertise to support machine builders in successfully applying weight based quality control for solar cells.

The transformation process from a block casted poly-crystalline silicon ingot to a solar cell consists of several individual steps. It starts with cutting and shaping the ingots into wafers. Then the wafers have to pass through several etching, coating and printing processes until it is a solar cell with the capability to produce electricity. A strict quality control check at the end of each treatment ensures only good wafers proceed to the next production step.

Weight-based quality control

Measuring the weight before and after each production step is a fast and reliable quality check. It allows for detecting deviations in geometry, completeness and density of the wafer before surface treatment starts. Then the weight difference is used for checking results of etching, coating and printing. It requires weigh modules with repeatable precision between 10 mg and 0.1 mg.

One weigh module for all steps

METTLER TOLEDO's high-precision weigh modules comply with the requirements. They can reliably detect deviations of less then 1mg in a fraction of a second. The WMS104C is the most often used weigh module for quality control in silicium-based solar cell production. It has a readability of 0.1 mg and the repeatability of 0.2 mg. The software applies filter algorithms to measure correct and repeatable results despite of vibrations from machines and drafts from the air conditioning system. An incorporated calibration weight allows testing of correct function without the need to remove the hosting adapter for the wafer.

Fast communication

The fast interface sends 92 filtered and compensated weight values per second to the control system. The transmitted data can be converted to all common Fieldbus Systems if required.

Consultancy ensures successful implementation

However, correct integration of weigh modules is key for the successful use of weighing technology in a solar wafer production process, because a number of challenging environmental effects have to be considered. Close cooperation during the design process between machine builders and the experts of METTLER TOLEDO ensures achievement of optimum performance.

Weight-based quality control is not limited to solar cells

Manufacturing of solar cells is not the only application for weight-based quality control. It can be applied to detect the smallest deviations in assembling, molding, coating, etching and printing processes for many products. METTLER TOLEDO has its own direct service and sales force. Its experts are globally available for consulting customers in correct integration of weigh modules into any kind of quality control applications.

Ask METTLER TOLEDO how weight-based quality-control can increase yield in your production.

▸ www.mt.com/WMS-man10

WMS104C Weigh Module

Readability: 0.1 mg
Capacity: 120 g
Settling time: 0.15 – 0.8 Sec.
Labyrinth in IP54 protects against ingress of dust particles
Wash-Down option in IP66 for cleaning with fluids

▸ www.mt.com/WMS-man10

Reliable and Fast 100% In-Process-Control

Detect violations of weight tolerances as small as 0.001% and control even complex-shaped parts in a split second with the automatic In-Process-Control solutions from METTLER TOLEDO.

Download a free White Paper about suitable quality control methods for parts, kits and modules.

▸ www.mt.com/ind-wbqc-wp-man10

See for yourself how simple In-Process-Control with weighing technology can be with in our videos.

▸ www.mt.com/ind-wbqc-video-man10

Automotive Parts
Manufacturing and Weighing

Discover smart weighing applications used in manufacturing automotive parts and increase your production performance.

www.mt.com/ind-automotive-guide-man10

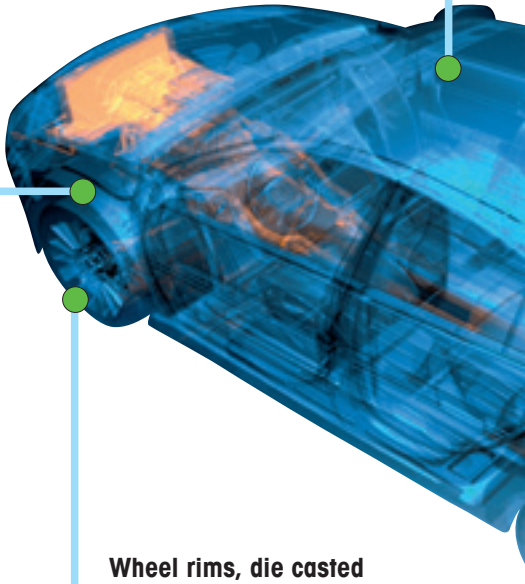
Tires, rubber, painting

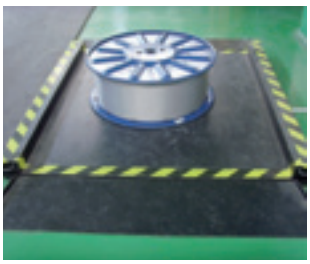
Batching scales mix raw materials automatically or semi-automatically according to predefined recipes even in difficult environments with vibrations.

Paint Mixing scales for automotive body shops easily integrate with the mixing software of the leading car paint manufacturers.

Interior parts, dashboard parts or modules

Over/Under Checkweighing Scales check completeness of parts and modules fast, with high-precision (<0.01% deviation) and cost-effectively without the risk of damage.





Cables, wires

Cable length can be very quickly monitored by weight and the customized unit function. This function is integrated in advanced weighing terminals and allows the definition of specific units such as length.

Weight compliance control

Improve your weight compliance control at the very end of the assembly line with repeatable and accurate weighing scales. Four weighing platforms attached to a programmable weighing terminal measures each wheel, axle and total weight at once and shows each result on the terminal's display.

Wheel rims, die casted or coated parts

Over/Under Checkweighing Scales discover production errors (< 0.01% deviation), such as cavities in castings, damage of coatings or if the parts are properly counterbalanced.

Various metal, plastic and electromechanical parts: fasteners, springs, locks, engines and motors

Piece counting scales make sure that the right quantity of parts is fast and accurately commissioned. They verify the completeness of a certain pack or container for just-in-time shipping and production. Industry compliant labels are provided for documentation.

Semi-automated counting solutions ensure flawless packaging during production. Efficient counting during production requires a high degree of automation. The scale controls conveyor belts, sound or light alarms and redirects material flows.

Inventory scale solutions survey inventory levels remotely. Integrated shelf scales transfer data to warehousing systems for efficient and transparent goods control.

Warehouse operations

Scales keep track of stock movement and ensure flawless storage of goods. Article data can be stored in internal or external databases on a PC and imported or exported to Excel. Product article information (e.g. average piece weight, tare weight) can be easily called up with a barcode scanner. Various interface options such as Ethernet, RS232, Bluetooth, WLAN, Profibus DP or DeviceNet allow flawless communication with other IT systems (e.g. SAP), automation systems or directly with a production machine. Labels can be configured according to industry standards (Odette, AIAG) or customer specifications (e.g. with pictures, barcodes, customer logos, etc.).

Fuel tanks, molded safety-relevant parts

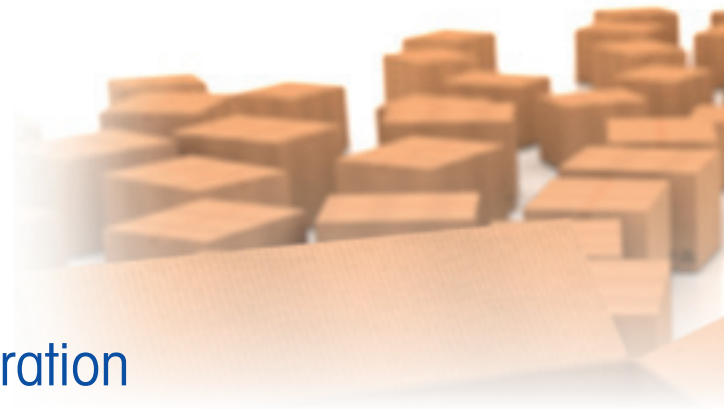
Statistical Quality Control Software analyses, controls and documents quality parameters such as weight, density or wall thickness of safety relevant parts – including full documentation for tracking and tracing. Furthermore, the amount of raw materials and waste may be reduced by precisely filling molds.

Ball bearings, metal parts and modules

Over/Under Checkweighing scales check the completeness and correct amount of lubricants for each individual part (<0.01% deviation).

Brake pads, sinter metal parts

Formulation & Recipe Weighing scales guide the operator efficiently through their daily recipe weighing tasks. They guarantee consistent quality and documentation for tracking and tracing requirements (ISO16949).



A Variety of Floor Scales
For Flexible and Fast Operation

K-Line: High-precision weighing

The K-line portfolio includes weighing ranges from 15 kg x 0.1 g to 6000 kg x 100 g with a verifiable resolution of up to 1 x 7500e single range, resp. 3 x 3000e multi interval. Different platform sizes and different construction types, such as bench scales, stand scales and free-standing or pit-mounted floor scales, offer the right solution for your specific application. The weighing platform sizes vary from 350 x 280 mm to 2000 x 1500 mm. The electromagnetic force compensation ensures high repeatability and high resolution. Combined with the lever arm, this technology guarantees optimum linearity with the slightest corner load tolerance. The built-in calibration weight can be adjusted on-site anywhere in the world. So, global use and relocation are no longer a problem.

PFA5_4: Versatile all-rounder

The PFA5_4 are highly accurate, low-profile floor scales designed for tough industrial environments. The basic assortment of the PFA5_4 includes 5 standard and 3 free dimensions with weighing ranges from 300 – 3000 kg. The scale is suited for virtually all applications. Numerous product options and a broad range of accessories allow these floor scales to be individually extended and configured. PFA5_4 can be installed on top of the floor or in a pit, and they can be used as portable scale. Further, the scales contain the rocker pin / rocker foot suspension, eliminating the need for field adjustment of suspension assemblies, bumpers or overload stops (in combination with installation frame).

PUA5_4: Rugged drive-through scale for industrial environment

The PUA5_4 are rugged drive-through scales that are designed to endure the industrial environment. The ultra-low profile of the scales makes loading weight on and off the scale easy. The low overall height of 35 mm to 45 mm allows smooth driving via a ramp and makes a pit installation unnecessary. The scales are ideal in an environment where scales cannot be installed evenly with the floor and need to be above ground. Thanks to side and end guards that protect the weighing cell against side shocks, the scale provides reliable and accurate weighing results. The scale is available in different dimensions, from 850 x 850 mm -1500 x 1500 mm, and capacities from 300 – 1500 kg. If you need more than 1 x 3000e certifiable standard resolution, all models can be supplied with higher single range, multi-range or multi-interval up to 3 x 3000e resolutions.

PTA455: Customized pallet scale speeds up your weighing processes

For fast weighing of pallets in goods receiving and shipping, the PTA455 offers a simple solution. The pallet scale is suitable for loads from 300 kg x 50g to 3000 kg x 200 g and has a standard resolution of 1 x 3000e single range. All models also available with the option of 1 x 6000e single range, 2 x 3000e multi range or multi interval, or 3 x 3000e multi range. The PTA455 is designed for quick weighing of standard Euro pallets. Or you can select the size you require from the following range:

- Length: 500 – 1260 mm
- Internal width: 450 – 1000 mm

The scale is available with a hot-dip galvanized construction or in stainless-steel. An optional handle can be mounted to the scale. Thanks to the, wheels on the scale tilt, and it can easily move around.

An Easy Shift
The Floor Scale for Changing Needs

In today's manufacturing industry, flexibility is key. Changing shop floor layouts, varied production line setups or new products manufactured in small batches demand a highly adaptable production system. Floor scales usually require a large space and are difficult to relocate; not the new PUA579mobile floor scale, which is built for flexible use at your workplace. Benefit from its easy, user-friendly and safe handling.

Various dimensions and capacities

PUA579mobile offers simple and safe handling during lifting, lowering and shifting of the scale. It is is available in all dimensions between 850 x 850 mm and 1500 x 1500 mm, and weighing ranges between 300 and 1500 kg. A terminal may be mounted on the slightly rear-positioned stand. The terminal does not project beyond the weighing surface and enables weighing of higher weighing goods as well.

Easy and safe handling

The scale can be moved with very little physical effort. Just fold down the four wheels and move the scale using the integrated drawbar. The lateral two-hand operation to fold the wheel cases guarantees optimal safety. The wheels are arrested in during weighing and moving, avoiding undesired influences impacting the weighing accuracy. When the scale is fixed in its installation frame, the access ramp is hung-up. Alternatively, the access ramp can be pushed directly underneath the platform together with the ramp fixation.

Mobility and flexibility

The PUA579mobile can be used in different areas by simply moving the scale to the desired location. The mobile floor scale offers many advantages. Heavy or fragile goods do not need to be transported a long distance to be weighed. Save transportation resources and profit from fewer damaged goods. If you need space for other operations, such as transportation, you can simply shift the scale away.

www.mt.com/floor-scales-man10

Base Model	CS	E	FL	FM	FH
Dimensions (length x inner width) mm	850 x 850	1500 x 1250	from 750 x 400 to 1250 x 1000	from 1000 x 1000 to 1500 x 1250	from 1500 x 1250 to 1500 x 1500
Height	35 mm				45 mm
Load capacity 300 kg	•	•	•	•	-
Load capacity 600 kg	•	•	•	•	-
Load capacity 1500 kg	-	•	-	•	•

Main features:

- Space saving: Can be pushed aside easily whenever it is not needed
- Flexibility: Can be used flexibly in your production (no fixation on the floor is required)
- Cost saving: Reduce your inventory and use the PUA579mobile in different places

Teknikprodukter
Designed for You

40 000 Articles Accurately Picked Every Day

When operators pick inventory for hundreds of orders every day, mistakes may occur due to human error. To improve efficiency in terms of both time and accuracy, Teknikprodukter Nordic AB, a Swedish distributor of bearings, power transmissions and seals, implemented a mobile parts counting solution that saves time and money while increasing accuracy.

Logistics Manager Rikard Lundberg says the new solution, which includes an article database and barcode scanner, has eliminated hand counting. In turn, this has reduced time spent on each order – and saved man-power means saved money. The operator brings the BBK462 high-precision counting scale (6 kg x 0.01 g) into the inventory area on a mobile cart, where he or she picks the article.

By scanning the barcode on the package, the scale automatically retrieves the average piece weight from the database. "Without taking any reference pieces, the operator can immediately start counting the required parts out of the blister," Lundberg says. "This process saves a huge amount of time. And with the high-precision scales, we ensure that our customers get the parts they have ordered."

Measuring average piece weights

Maintaining tens of thousands of articles can be a challenge. But with the BBK462 high-precision counting scale, the inventory is downloaded weekly from the company's database to the METTLER TOLEDO SmartManager database that runs on an industrial PC right next to the counting scale. The BBK462 counting scale is connected to both the SmartManager and a barcode scanner. Just by scanning the barcode, the average piece weight is recalled from the database.

As the average piece weight of some plastic parts, such as seals, frequently changes, a function can be activated that automatically prompts the operator to take a new sample and determine a new average piece weight, which is stored in the SmartManager database.

For more details on Parts Counting, visit
www.mt.com/count-man10

Visit Teknikprodukter Nordic AB
www.teknikprodukter.se

Mobile cart with BBK462 (6 kg capacity, 0.01 g readability), barcode scanner and SmartManager database on industrial PC

Less than 5 Seconds
to Check Shipment Completeness

To be successful, distribution companies must deliver complete shipments on time. By simply checking shipment completeness, they can ensure customer satisfaction and considerably reduce losses. The largest distributor of press in Czech Republic found a simple and effective way to control completeness – by installing a checkweighing scale on its shipping line.

Mediaprint & Kapa Pressegrosso, distributes more than 1000 titles to outlets throughout the Czech Republic from one state-of-the-art distribution site. The company wants all of its customers to have access to their favorite magazines everyday, everywhere. To ensure completeness of all shipments, Mediaprint chose to checkweigh all its orders prior to distribution.

"To install a checkpoint, we needed a very precise and robust industrial scale and a solution for comparing the theoretical, computed shipment weight with the actual weight," says Mediaprint Sales Director Václav Čihák. He says to do this, the company needed to change its information system. After inspecting a model solution at a customer's site where scales and systems were in use under rigorous conditions for many years, Mediaprint decided to supplement its exisiting information system with a checkscale from METTLER TOLEDO, which tailored its solution to Mediaprint's needs.

Completeness checks in seconds

Mediaprint chose the KB60 weighing platform – with a weighing range of up to 60 kg and 1 g readability as its checkweighing soution. The programmable display unit for the scale, the IND560 terminal, communicates with the parent system via Ethernet. A barcode reader is connected to the terminal and the integrated relay set controls external signal lights. The terminal display shows the operator important information. A single check takes less than 5 seconds to complete.

METTLER TOLEDO integrated three elements into Mediaprint's existing information system:

1. Reference weights of current magazines added to the system

The reference weights are determined using the BBA432-15LA scale designed for piece counting. The scale computes the average weight of one copy on the basis of ten items and communicates the information to the system. The procedure is repeated for all of the publication titles to be distributed that day.

2. System information communicated to the checkweighing scale and comparison result is archived

Depending on the job structure and publication unit weights, the system computes the theoretical weights, including permitted tolerances. The job number is scanned at the checkpoint using the barcode reader, and the system then sends the expected weight to the scale terminal. The result of the theoretical and actual weight comparison is communicated and then archived.

3. Scale checks completeness

The operator places the shipment on the scale. The scale compares the theoretical weight received from the system to the actual weight to a readability of 1 gram and decides whether the job is complete. A green signal light indicates the current weight is within the allowed tolerance. A red light indicates that copies are missing or that the shipment includes excess copies. In that case, a manual check is performed. If the job is distributed across a number of packages, then the individual weights in the terminal are added, and the total weight is only compared after the last weighing.

KB60 high-precision weighing platform (60kg capacity, 1g readability).

Čihák says METTLER TOLEDO has been supportive throughout the entire system implementation. "As always, when something new is being developed, some details have to be tackled. METTLER TOLEDO is always willing to provide assistance and quickly solve the problem," he says. "The function and reliability of the scale system meet our expectations and we assume it will also be used at our other sites."

Access Free Expert Knowledge and Gain Competitive Advantage

Use METTLER TOLEDO's online collection of knowledge to your advantage. Learn about weighing by watching videos, participating in webinars, reading brochures, testing your scale and calculating your return on investment.

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